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WHEN THE AIRPLANE WAS A MILITARY SECRET

A Study of National Attitudes Before 1914

by

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A LITTLE MORE THAN FIFTY YEARS AGO, on the morning of December 17, 1903, between ten thirty-five A.M. and noon, two unknown young brothers from Dayton, Ohio, Wilbur and Orville Wright, made a series of four short flights in a powered airplane of their own design and manufacture, on the flat beach at the foot of the Big Kill Devil sand dune, near Kitty Hawk, North Carolina. As this unassuming pair — superlative geniuses, nonetheless — was obliged to explain, a few weeks later, to a skeptical — in fact, almost totally uninterested — public, those brief flights, sustained, controlled, made with engine power alone from a level starting point to a landing point as high as that of takeoff, demonstrated, beyond doubt or quibble, "that the age of the flying machine had come at last."

This is a key event and a key date to be impressed on the mind, for I venture to believe that it will be remembered at least as long, shall we say, as the Ides of March of 44 B.C. and the murder of Caesar, or as Christmas Day of A.D. 800 and the crowning of Charlemagne, or as 1066 and the Norman invasion of Britain, or as 1492 and Columbus's finding of the New World, or even as July the Fourth, 1776. In class and importance the event we are concerned with — the conquest of the air, man's bursting of the fetters that, since creation, had bound him to the surface of the planet — belongs to rank with the discovery of the use of fire, the invention of the wheel, the development of the printing press, the harnessing of electricity, and the splitting of the atom.

The era through which the world is now passing began in a positive, definable way at about the seventh decade of the last century; it is now therefore less than a hundred years old, and, from what is known of similar periods in the past, it is likely to continue for at least another several generations. It is essentially an era

of transition, of political and social upheaval, of scientific and technological revolution — in short, a "time of troubles." As one of our more discerning Western statesmen, Jan C. Smuts, noted in a remarkable book, **Holism and Evolution**, fifty-odd years ago, the peoples of the earth are once more on the march, striking their tents, uprooting the past, moving in ferment into the unknown. There is no telling what vicissitudes, whether of progress or of retrogression, must supervene before they come to rest again.

THE MAIN CHARACTERISTICS OF THIS ERA at its outset are well known — nationalism, materialism, secularism, internecine conflict, leavened by recurrent internationalist yearning, the dream of the abolition of war and of the brotherhood of man. Yet, the first great step taken by the new German Reich after its emergence as a nation was to lay low, in 1870-71, its rival, France. In Italy, at nearly the same moment, political unification was achieved at the expense of seizing the Papal States and the humiliation of the Church. In North America, in the re-United States, the victors of that most sanguinary struggle we call the Civil War sullied their cause, and mocked the Union so many had died to preserve, by the intolerance, intransigeance, corruption, and venality, with which they treated their vanquished brothers. In Russia, at about this time, in Holy Russia, the well-intentioned but shortsighted autocrat who by imperial fiat had unshackled millions of serfs chained to the black land was blown to bits, for his pains, by a handful of "crazy" nihilists who were not to be moved by acts of mass magnanimity on the part of a decaying ruling order. In the Orient, while the ancient Empire of China seemed to be tottering under the accumulated weight of impractical virtues and unprofitable vices, its tiny neighbor empire Japan, bettering the short half-century of instruction by the Western world, was acquiring sea power and girding itself to make good a fantastic ambition. Meanwhile, in England, in the gathering twilight of Victoria's long reign, a mood of irrepressible optimism prevailed, a faith in inexorable progress based on Science, Education, Trade, and the Royal Navy, a state of mind contrasting strangely, it now seems to us, with the facts of existence.

As the new century approached, there were abundant signs that all was not well. The British were brought up short, momentarily, when that spot of trouble in South Africa, the Jameson Raid, became the Boer War. Just as suddenly, the United States felt constrained to effect the ouster of Spain from her last real holdings in the Western Hemisphere and, by a well-timed "flanking" maneuver, to relieve her of her Pacific outpost, the Philippine Islands, as well. That similar so-called small wars were narrowly averted in North Africa and other points around the globe but confirm the incendiary temper of the times, checked for a moment here and there, perhaps, but soon to break forth in a tornado of flame and destruction.

WAR AND THE URGENT THREAT OF WAR — as we have come to know all too well — have always been the stimulus of technological advancement. The American Civil War and the Franco-German War of 1870 — the great wars of their day — had each provided a spur to the development of aeronautics. The possibilities of lighter-than-air craft had been demonstrated as early as 1783 by the French brothers, Joseph and Etienne Montgolfier, and ever since 1794 balloons had been used, on and off, for military purposes. In the Civil War, however, they were for the first time employed for observation of the enemy and for directing artillery fire, and during the siege of Paris, in the Franco-German War, they carried dispatches from the beleaguered city to the army headquarters many miles distant. But in the course of these rather positive advances, the deficiencies of this mode of "navigation the air" also came to be recognized, and some perspicacious investigators correctly adduced that ballooning was essentially a diversion along the path of quest for

truly practical means of flying, with speed and relative safety, from one chosen point to another, independent of wind and weather.

For a few years, then, there was a perceptible increase of interest in the problem of flight, with a few trained scientists and a larger number of so-called practical inventors and amateurs turning their attention to the mystery. The results, alas, were mainly negative, and it is disappointing to note that the professionals were usually the first to throw up their hands and to add their voices to the old chorus of assurances that flying must be relegated, like perpetual motion, to the class of fascinating but fruitless studies, to be lingered over only by the idle-headed, by crackpots, by fools.

THE PICTURE was not one of unrelieved darkness, however. At the very moment of the downfall of the Second Empire, a young French invalid, Alphonse Penaud, was experimenting quite successfully with what we would now call model airplanes, powered with twisted rubber bands and steadied in flight by a system of inherent stability which he devised and which still bears his name.

In Germany, after the War of 1870-71, a young engineer and inventor of navigation instruments, Otto Lilienthal, with his brother, Gustav, began the systematic study of birdlike flight, or soaring, and proved by gliding and by aero-dynamic experiments with a whirling arm the advantages of curved or cambered over flat or plane wing surfaces. For more than twenty years, Lilienthal persevered in his remarkable work, wrote a book, **Der Vogelflug als Grundlage der Fliegekunst (Bird Flight As the Basis of the Flying Art)**, fundamental in the history of aviation, and, in 1896, was killed when one of his gliders crashed, the first victim of heavier-than-air flying.

In the United States, an astrophysicist of high standing, Samuel P. Langley, best known perhaps as the third Secretary of the Smithsonian Institution, took up the problem, coupling some very ingenious experiments on the subject of air pressure coefficients with the testing of rather large-scale power-model airplanes. With one of the latter, in 1896, Langley achieved an extraordinary flight of nearly a quarter of a mile over the waters of the Potomac near Washington. This success convinced Langley that he was on the point of a definitive solution, and when the Spanish-American War came he allowed himself to be induced by the United States War Department to attempt, as a defense project, to apply his system to the construction of a full-size, man-carrying airplane that could be used in war. Misled by the easy progress of his models, the aging scientist underestimated the complexity of the problem of practical flight, and the end result of five years of dogged labor, that cost the American Government and the Smithsonian Institution $100,000, was a complete fiasco. In other terms, Langley's failure cost much more than money and the weakening of a personal reputation, for it marshalled public and governmental opinion in the United States almost solidly against aviation and, to a lesser degree, dampened aeronautical spirits abroad.

IN SETTING THE SCENE for what was to follow, it must not be overlooked that the Langley episode had its counterpart in France. There, in the early nineties, an engineer named Clement Ader began some experiments that resembled Langley's in that they attempted the solution of the whole airplane problem at one fell stroke. There is nothing like satisfactory evidence concerning Ader's early work or the means by which he elicited the interest and financial support of the French War Ministry in it, but it is an incontestable fact that the secret trials of his machine before a government commission in 1897 were an utter failure. The commission's report, made public many years later, stated that, while the objective of powered flight was one

worthy of pursuit, Mr. Ader's apparatus had not demonstrated the capacity of attaining it.

To summarize this all too slender sampling of the state of the art and opinion about it as of the turn of the century, a brief quotation from H. G. Wells, that seer of "things to come," serves very aptly:

> For two thousand years or more, men dreamed of flying and sought to fly. But for a wearisome sequence of centuries they got nowhere. . . . The general wisdom remained quite sure that flying was forever denied to man. There is a long list of solitary men, who announced that they were discovering or had discovered flying. They achieved nothing; they left nothing to their successors but broken bodies, broken wings, and discouragement. . . .

Wells's last statement is, of course, not wholly true, but it is so near the truth as to be almost indistinguishable from it. Certainly, some progress was made in the last quarter of the old century, but the fact remains that the essence of the problem had hardly been grasped. Lightweight, high-powered motors, excessively light construction, even — in the last analysis — aerodynamic efficiency, were of secondary importance; the heart of the matter was equilibrium — balance in the air — control. A few rare minds had perceived this — Wenham, in England; Chanute in the United States; Mouillard, the Frenchman, self-exiled to Egypt; and, to some extent, Lilienthal, in Germany. But the only advances toward achieving it were made by the young men of Dayton, Ohio, Wilbur and Orville Wright.

After their first flights, when they packed their goods and started home from Kitty Hawk in December 1903, the Wrights had no illusions concerning what they had done. They knew that their machine "possessed sufficient power to fly, sufficient strength to withstand the shocks of landings, and sufficient capacity of control to make flight safe in boisterous winds, as well as in calm air," but they did not think they had achieved anything more, by ideal standards, than a crude performance with a piece of equipment that was at best the mere prototype of an airplane. Compared with what had ever been accomplished up to that time, it was a decisive revolution; compared with the potentialities of flight as they saw them it was nothing — only a beginning, but such a beginning as to make them immortal and to augur a new age.

The whole year of 1904 the Wrights devoted to improving the performance of their machine and to learning to fly it under a variety of conditions. On September 20, they made the first flight in a complete circle, repeating this then most difficult maneuver on November 2 and again on November 3. On November 9, in one flight, they circled their practice field four times, covering a little over three miles in five minutes four seconds. .On this occasion, as historians may note with mild amusement, the paths of aviation and American party politics crossed briefly, for, as the Wrights confessed to a friend, the impetus behind this unprecedented effort was the phenomenal victory, the previous day, which elected Theodore Roosevelt President of the United States.

1904 WAS A MEMORABLE YEAR for the Wrights in many ways. In it they made 105 flights, which brought their total to 109. In it they solved many problems of pilotage by refining the method of applying their three-torque system of control. In it, also, they had the first sign of interest in their invention from a government when, in November, Lieut. Col. John E. Capper, of the British balloon service, called on them at Dayton as he started homeward from the Columbian Exposition at St. Louis.

For a time the Wrights had seriously considered making a public exhibition of their airplane by entering the aeronautical competition planned for the big fair.

As very little had been published about the Wright machine, save the bald statement that it had accomplished dynamic flight, and there was much skepticism regarding the truth of this assertion, the press, particularly the foreign press, had raised a clamor over the possible entry of the Wrights as contestants for the aeronautical prize. The hope of seeing the Wrights make their mysterious apparatus perform was therefore doubtless one of the main motives of Colonel Capper's American trip. Another leading attraction was to have been the dirigible of the Brazilian-born French aeronaut, Santos-Dumont, but an accident to his balloon — unexplained to this day — caused Santos to withdraw before the fair opened. After this, the proposed contest lost much of its appeal, and the Wrights decided to stay out of it.

Capper's call at Dayton set something of the pattern of later visits by other emissaries representing both governmental and private circles. The Wrights were polite, even cordial; they freely explained the results of the year's experiments; but they did not offer to show or to demonstrate their machine. Capper, who became a good friend, seemed convinced that they had done all that they claimed, for he recognized them as men of integrity. Before leaving, he urged them to make a formal proposal to the British Government, on their own terms, for the sale of their machine. The Wrights were in no hurry, but as the year 1904 closed they were convinced they would have no difficulty in finding a market for their sensational product.

AT THIS POINT it is necessary to digress briefly into the subject of patents as it has an important bearing on the multifarious negotiations the Wrights were soon to enter into with half a dozen of the leading countries of the world. When they had solved to their satisfaction the main technical problems of controlled flight in their perfected glider, and before their power machine had been built, they went rather carefully into the question of patents. They concluded that as the mere filing of a patent is a disclosure, and as pioneer patents — the only kind that would be of use to them — can only be established by lengthy and expensive litigation, the net result in guaranteed protection would be negligible. At the same time, they realized that, when and if they succeeded with a power machine, concealment, and therefore nondisclosure, would become virtually impossibe in time, and that, in such circumstances, the chances of protection without a patent would be nil.

Reluctantly, then, on March 22, 1903, nine months before the Kitty Hawk flights, the Wrights filed a patent application. This application, it must be remembered, was not for a power airplane but for an apparatus, classed under the Patent Office terminology of the day as a "flying machine," which incorporated the constructions and combinations of the Wright 1902 glider. The Wrights were aware of it, but it is a curious fact that if they had filed for a power machine the application would almost certainly have been disallowed, because the official rulings of the Patent Office at that time held that dynamic flight was a physical impossibility and, therefore, devices purporting to effect such flight were not patentable. Parenthetically, I may say that gliders, or the common garden variety of "flying machines," did not come under this stricture because, in them, the motive power is supplied by gravity, and the Patent Office was evidently not prepared to deny the existence of that.

IT IS HARDLY NECESSARY TO STATE that the basic Wright patent was carefully drawn and that it deliberately concealed as much as it revealed; that is, it was couched in the broadest possible terms. It was intended to stand as a pioneer patent, yet it read so innocently that many of those who were sued for infringing it, later on, could not see why it should withstand their onslaughts. It was so broad, they held, that it could mean anything or nothing, but the courts held it meant everything. It was the law and the prophets.

Good as it was — or perhaps it was good because of it — the patent had a long struggle to get through the Patent Office and, in the United States, was not granted until May 22, 1906, three years and two months after filing. Meanwhile, after the initial difficulties of language and method of presentation had been got over, the Wrights proceeded to file the same application in other countries — Austria, Belgium, France, Germany, Great Britain, and Italy — all in March 1904. The British patent was the first to see the light of day, being accepted in May 1904 and published by His Majesty's Stationery Office in June.

THE CHARGE OF SECRECY, or perhaps better secretiveness, has often been leveled at the Wrights, but like most such accusations it does not accord very well with the facts. That is not to say that they did not have a secret. They believed they had, but it certainly was not in the patent, not in the constructions and combinations of their airplane. It was in their brains and their muscles and nerves. It was in their superior knowledge of aerodynamics, gained from painstaking, original investigations with their wind tunnel, from their long labors in devising a theory of propeller action, from their thousands of glides, their dozens of flights, from their discovery both of the existence of, and the cures for, the classic hazards of flying — the nose dive, the stall, the tail spin, sideslip, skidding in the turn — let alone their fundamental conception of the preservation of equilibrium about the three axes of an airplane. Nevertheless, they were acutely aware that, with the publication in England of their patent specifications and drawings in the summer of 1904, at least part of the cat had been let out of the bag.

THE 1904 EXPERIMENTS — the closed circuits, the S-shaped courses, the long flights — convinced the Wrights that their invention had been brought to the practical stage, and the nibble from England encouraged that judgment. Accordingly, in January 1905, thirteen short months after Kitty Hawk, they did what they had more or less always planned to do: they offered the airplane to the United States Government for use by the Army for scouting and carrying messages in time of war. They proposed either to provide machines of agreed specification, or to turn over all scientific and practical information, together with a license to use their patents, thereby placing the Government in a position to operate a monopoly. The airplane was to be the exclusive military secret of the United States, both as to the machines themselves and the know-how.

To the Wrights' utter astonishment, the War Department's reply was a flat turndown, so stupid as to be insulting. It said, in short, that it declined to lend financial support to the **experimental development** of devices for mechanical flight and would give consideration only to devices that had been **brought to the stage of practical operation.** The Wrights could scarcely believe their eyes and doubted that their letter had even been read. Thus rebuffed in their own country, they turned to Europe but not without resolving that these foreign negotiations would not be allowed to deprive the United States of the airplane, however obtuse the bureaucrats in Washington might be. In other words, they would make no foreign contract conferring exclusive rights to the airplane; the American rights would always be excepted.

THE BRITISH NEGOTIATIONS — which, like all the foreign negotiations are too lengthy to be discussed here in any detail — dragged on through 1905 and much of 1906, and were as unproductive as were repeated attempts to interest the American Government in the same period. Meanwhile, in 1905, the Wrights kept on flying, improving their techniques and constantly breaking their own records. Between the third week of June and mid-October, 49 flights were made, the longest, on October 5, covering 25 1/5 miles in 38 minutes, 3 seconds. When the figures were published, there

was a new wave of disbelief, particularly in France. The Wrights were called bluffers — **bluffeurs** — and at a famous night wrangle among the pro-Wright and anti-Wright members of the French Aero Club one member exclaimed with an air of finality that if the Wrights had really done these things it would be known because in America nothing escaped the notice of the press. Another asked cynically: "Who is their financier? It would be interesting to talk to him!" Still others shook their heads and said it was "known" to be impossible to fly with a motor of only 12 horsepower. And so it went.

NOT ALL THE FRENCH were incredulous, however. In May 1905, Captain Ferber, of the Alpine Artillery, who was an air enthusiast, and had followed the Wrights' gliding work closely, imitating their machines, and frankly avowing his own to be **"du type de Wright"** — "Wright type" — wrote to ask the brothers if they would sell an airplane and on what terms. The Wrights did not reply until after their long flights of October. Then they wrote a favorable answer offering to fly at a speed of 40 kilometers an hour, in a machine carrying the operator and supplies for a 160-kilometer flight, or the operator and a passenger, but they mentioned no price. Ferber went to his superior, Colonel Bertrand, only to be told that the Fench Government could not risk paying a "probably enormous" sum for a machine that had not yet been proved positively to exist. But Bertrand did suggest that a commission might be sent to America to investigate.

In the closing days of 1905, an investigator from France did go to Dayton, but he turned out to represent not the Ministry of War but the Paris newspaper **Le Journal** and other members of a syndicate formed, he said, for the purpose of buying a Wright airplane and presenting it to the Republic as a patriotic gesture. Ferber, it seems, had failed on the first go-round to get backing for his project, so he turned to men of wealth and a powerful newspaper. In Dayton, with a stranger without credentials on their hands, the Wrights were trying to piece the puzzle together. They strongly suspected that the emissary, Fordyce, was not really speaking for the **Le Journal** but for the War Ministry which was chary of committing itself for fear of the scandal that would ensue if the Wrights proved to be a hoax. On the strength of this suspicion and because Fordyce was a personable chap, they gave an option. When Fordyce returned to France, his employer, Henri Letellier, proprietor of **Le Journal**, acted in a way that very nearly confirmed the Wrights' estimate of the situation. Letellier took the Fordyce option and presented it to Etienne, the Minister of War, who accepted it and in return promised that if the purchase of an airplane should finally eventuate, the transaction would be handled through **Le Journal**, which would get the publicity and the credit for extraordinary patriotism.

As it turned out, the deal fell through, to be renewed several times in different forms — but the whole story is much too involved to go into further. It would be pointless to cite the negotiation at all if it were an isolated instance. It is not. There is a counterpart for almost every country and every occasion where the acquisition of the airplane was considered.

WHY, WE ASK, were such strategems, such machinations, necessary? To what did they lead? What was their point?

True motivation is always hard to discover, harder to isolate. For centuries man had yearned to fly. Now he could do it. But was there any jubilation over the fact? Was there any appreciation of what it meant? Any realization that the globe had shrunk, that power equations would be overturned, that a new dynamic force had come into being that would alter the course of history? Not at all. The very governments, the very statesmen, who should have known that so potent a factor could not

henceforth be omitted from their calculations, shied away from it, discounted it, haggled over it as if it were some superfluous commodity thrust upon them by mountebanks. The airplane, instead of being hailed as a new triumph of man over the physical world, an accomplishment to be studied and exploited, was allowed, or better, forced, to be kept a secret for five years. The charge has been made that the Wrights hid their invention, that their secretiveness retarded the development of the airplane. Nothing could be further from the truth. They were ready to sell at any time after 1904, but in every negotiation it was the would-be purchasers who, if they considered it at all, insisted upon secrecy, upon exclusive use, upon monopoly, and this the Wrights were unwilling to grant because they felt that the airplane, an American development, should be owned by America, if by anyone, and by the American Government, but America was more indifferent than all the rest. Finally, however, the bird came home to roost. In the end, the American Government became the first government to own an airplane and the only one to purchase directly from the Wrights.

LET US, FOR A MOMENT, go beyond, or rather behind, the airplane, and — to take one example out of many — look at the mood that prevailed in top military circles in England in the Edwardian period. The Secretary of State for War is Richard Burdon Haldane. He is a Scot by blood, his profession is the law. He is an admirer of Goethe and has a taste for Hegelian metaphysics. He is a patron of education, a patron of science. He is the King's friend and, some say, the Kaiser's. He is devoted to his mother, whom he writes daily. He enjoys intellectual companionship, belongs to a dining club, the Coefficients, which is also frequented by H. G. Wells, H. J. Mackinder, Edward Grey, Sidney and Beatrice Webb, and others. The advanced army training course that Haldane sets up in the London School of Economics is familiarly referred to as his "Mackindergarten." In the War Office, he is an organizer and reformer. He is for a cheap army, and a first-class navy, and so he plans the Territorial Army and reduces the artillery. He proposes the Imperial General Staff, and when Clemenceau visits London he resists the wily Frenchman's argument that England should prepare to embark large armies to the Continent in the event of war. Yet as late as 1912, just after he has told the Kaiser that England will not promise to be neutral if war should come, he is sure that relations between England and Germany were never better.

I DO NOT KNOW if Haldane was present when his friend Mackinder, in April 1904, only a dozen or fifteen weeks after the Wrights had flown at Kitty Hawk, delivered his memorable lecture, "The Geographical Pivot of History," before the Royal Geographical Society, but he certainly knew of it. Mackinder's purpose was to set up a counterpoise to the Mahan thesis of the dominant influence of sea power upon history. He maintained that the sea-based civilization of ancient times had been overturned by camel and horse mobility emanating from a great "Heartland" stretching from the Elbe to Vladivostok — a "Heartland" at the center of what he called the main "World Island," of which Europe was a mere peninsula. He argued that if such a catastrophe could occur in such times and in such primitive conditions the danger must be much greater in the days of industrialization and rail mobility, when the potential of the "Heartland" was so much greater. The peripheral areas could only survive, he thought, if they formed an effective barrier, a chain of nations, to offset the "Heartland" and, if possible, to keep it politically divided.

The discussion following Mackinder's lecture is as interesting to us today, when by the North Atlantic Treaty Organization and, until lately, the European Defense Community, we are striving to provide a barrier chain of nations against the threat from the Eurasian "Heartland," as it should have been to Haldane. The first comment was made by a fellow Coefficient, L. S. Amery, and was addressed to Mackinder's statement that the West already possessed as a basis for its defense the widest

possible mobility of power, short of winged mobility. Amery suggested that the advent of the airplane and its development at the hands of the industrialized nations of the periphery might redress the balance to the disadvantage of the "Heartland." This, remember, was in 1904.

So far as we know, there is no evidence that this possibility was understood or even taken into account by Haldane. When, in 1907, the Wrights, through their agent, Charles R. Flint & Co., made contact with him, Haldane took a high ministerial tone. He was not interested in acquiring a new plaything for the Army. There was, he said, no public demand for airplanes, and that, as the responsible cabinet officer, he must be responsive to public opinion. Now, if the Wrights or whoever it might be — and there were so many of these fellows who claimed to have done this or that — should make a flight of a hundred miles or more in the full view of the public, a demand for airplanes might be engendered, in which case it would be his duty to look into the matter. This argument was all well and good, but it left totally out of the reckoning what might happen to England if war broke out with Germany possessing the airplane and England not possessing it.

In writing his memoirs many years after the events, Haldane offered an explanation of his early attitude, and of England's, toward the airplane that not only reads like an apology but is so contrived as to put the unwary completely off the scent. He resorts to an appeal to authority, presumably to make the worser seem the better cause. Lumping together, anachronistically, all his first associations with aeronautics under the head of "the commencement of the Air Service" (the foundations of which were laid in 1911-1912 and not in the period before 1908 with which we are concerned here), he wrote:

> Numbers of inventors came to see me as the then responsible Minister, including the brothers Wright,

— though in fact he never set eyes on them —

> and I examined many plans and specifications. But I saw that those whom I interviewed were only clever empiricists [emphasis supplied], and that we were at a profound disadvantage compared with the Germans, who were building up the structure of the Air Service on a foundation of science. I therefore took the matter largely out of the departmental hands, . . . and going to the Prime Minister, got his authority to add a special section to the National Physical Laboratory at Teddington. There we installed a permanent Scientific Committee, paid for its work, including our best experts, both theoretical and practical. We were so fortunate as to persuade the late Lord Rayleigh . . . to preside. The Committee [formed in 1909] began from an early stage to furnish us with guidance of great value.

One need not query the confusion of the airplane with the airship implied in this passage, nor elaborate on its evident evasions, to make clear that, despite the undeniable talents of Rayleigh and the later great contributions of the Advisory Committee on Aeronautics, Haldane, and so England, missed the aviation bus as completely as Neville Chamberlain was to miss another bus at a subsequent stage of world history.

Nor, so it seems, was Haldane actually oblivious of the error. In a speech in 1910, he had said:

> When a new invention like the submarine or the motor, comes to light, the Englishman is usually behind. Give him a few years and he has not only taken care of himself in the meantime, but is generally leading. As it was with these inventions, so I suspect it will prove to be with aircraft.

THE WRIGHTS HAD LONG BELIEVED that England was not interested in acquiring the airplane or in encouraging its development because its leaders cherished the illusion that by a negative attitude they could somehow preserve their insularity and thus, with the navy, their chief defensive asset. But England did want to keep abreast of information concerning the airplane and hoped, if possible, to prevent its acquisition by any continental power. The desire to get information was the sole reason for entertaining negotiations at all: "How far can you fly? How high can you go? How fast? How many men can you carry?" And in this view the Wrights were doubtless correct. Even Churchill, who was to espouse aviation warmly in 1917, did not countenance it in 1907. But then, as the spearhead of the Cabinet committee on economy, he did not countenance the Dreadnoughts, either.

We have looked casually at the temper of England. The same things could be seen in France, and to some extent even in Germany. Since 1871 France had been suffering from a sense of inferiority, of shame, of frustration. In many quarters, the Army was looked on with suspicion, as the cause of the defeat. Then the Dreyfus affair rocked the nation. Even after the heroes of the Dreyfus case, like General Georges Picquart, came to power with Clemenceau, the War Ministry was run with extreme circumspection. The fear of scandal, of betrayal, was in the atmosphere. Clemenceau hesitated a long while before appointing a brilliant soldier, a fellow named Ferdinand Foch, to head the new Ecole de Guerre, because Foch was a Catholic, and Clemenceau's policy was to war on the Church. He underrated Foch just as he underrated his adversary, the head of Foch's religion, the great Guiseppe Sarto, now canonized as Saint Pius X. As for the airplane, the French press believed the Wrights to be hoaxes — liars not flyers, they said, — and the government was willing to agree that the press was right. The only times the War Minister made any signs of positive interest in closing a contract was at each flareup of the Moroccan crisis. As soon as danger passed, interest subsided. One clique in France, a vociferous group of erstwhile balloon enthusiasts, opposed the Wrights for another reason. Their battle cry was: "Shall the country of the Montgolfiers have the shame of allowing the airplane to be perfected in America? No, French genius must solve the problem. French motors are the finest in the world. Even if the American bluffers did make some kind of flight back in 1903, we will soon show them up with the superiority of our own machines."

IN GERMANY, the French fear of scandal had its equivalent in the fear of the Kaiser. Wilhelm had organized his private airship society and watched over it carefully. Their task was to make sure that Germany won the balloon part of the arms race with France. It was with one member of this society, Isador Loewe — of the Mauser gun works, incidentally — that the Wrights carried on the most interesting part of their German negotiations. In July 1907, during Wilbur Wright's first visit to Europe, Loewe asked to have written down what the Wrights thought were the advantages of the airplane over the airship, if any. Wilbur was delighted to comply. His paper is a most interesting one, and represents the first time a true expert expressed an opinion on a great question of military aviation. The paper circulated among the German General Staff and seems to have had some influence. When Wilbur Wright met Moltke, Moltke said he thought highly of the possibilities of the airplane. Krupp said the Wrights' argument that a fast-flying plane could not be hit with any existing anti-airship guns was correct. Of the European countries with whom they dealt, the Wrights thought Germany treated them most intelligently. The Germans merely said: "Show us what you can do and we guarantee you will be treated fairly." Had it not been for a sudden awakening of interest on the part of the United States, it is more than likely that the first sale of the airplane would have been to Germany.

The late thawing of the American War Department brought the period of negotiations to an end. The Wrights' attention was turned to building a new plane that met the War Department's specifications and to resuming practice preparatory to the official acceptance trials scheduled for the summer of 1908. News of the American contract soon changed the picture in Europe, and a French syndicate, headed by Lazare Weiller, an enterprising business man, asked to buy the French rights to the Wright patent and to form a French Wright Company. The Wrights agreed and as part of the contract engaged to make demonstration flights in France. It turned out that these were to take place at the same time as the Army acceptance trials in America.

It was a dramatic moment in the history of aviation. Orville Wright stayed home and made the famous flights at Fort Myer, Virginia; Wilbur went to France. With the commencement of these demonstrations in August 1908, all questions about the truth of the Wrights' claims to the mastery of the air evaporated. The French who had ridiculed them one day covered them with adulation the next. Wilbur was the hero of the hour. The honors, the attentions, heaped on him were matched by nothing in aviation until Charles Lindbergh made his incomparable flight to Paris more than eighteen years later. King Edward VII, whose friend Haldane had seen no demand for airplanes, came to Pau to watch the flights and to have Wilbur Wright explain to him the mechanisms of the wonderful machine. Also came young King Alphonso of Spain who, though he longed to go up as a passenger, had promised his young queen that he would not, and, in this dilemma, hung about the field like a schoolboy at a county fair. He was soon followed by another monarch, Victor Emmanuel, who appeared like any tourist with a camera slung over his shoulder. The next year, Wilbur flew at Rome and Orville at Berlin. At the latter place, the flights were witnessed by almost every member of the imperial family, including the Kaiser. After one flight, the Crown Prince took from his necktie a diamond-and-ruby stick pin made in the form of the letter W, an initial that could stand for Wilhelm or for Wright, and presented it to Orville.

As a show, the Wrights were, as the French say a **succes fou**. Their personal triumph was complete, but it must not be overestimated, for it is easy to be misled by it. That is to say, their success was not equally a success for the airplane and for the power it represented in potential. That this is true is evidenced by the fact that most of the more influential personalities in the military circles of Europe remained unconvinced. General Eberstadt, for instance, a highly placed German officer who witnessed the flights made by Orville Wright at Berlin, dismissed the very performances that had so markedly impressed the Crown Prince as interesting but valueless circus stunts.

When we seek the true advocates of the airplane or of a possible airplane in this early period — that is, persons who believed in what the airplane would be able to do, if not precisely at the moment of its advent, then at least within a measurable distance from its advent, we must go, for the most part, outside the government bureaus and executive departments, beyond the halls of parliaments — just as earlier we had to go, for the most part, beyond the sphere of the professional scientists. We must go into the realms where there was room for the exercise of constructive imagination, speculation even, for creativeness, for the expression of opinion in the broadest sense of the word. We find them in writers; novelists like H. G. Wells; journalists, like Alfred Harmsworth, Lord Northcliffe; in sporting enthusiasts, like Frank P. Lahm, the Parisian-American member of the Aero Club of France; and in the membership of the newly formed Aero Club of America which, in 1906, before the spectacular demonstration flights at Fort Myer, at LeMans, at Pau, and Berlin, hastened to resolve that the air had been conquered, and that the world must now look to the effects of that conquest.

When Santos-Dumont, in the fall of 1906, hopped his weird-looking airplane, the 14-bis in Paris — thereby becoming the first man in Europe to get off the ground in a power machine, Northcliffe fumed at the scant notice his editors gave the event. "The news," he snorted, "is not that man can fly, but that England is no longer an island!" What a contrast between this forthrightness and Haldane's silence.

Wells in his sphere did not hesitate to come out with such prophetic science fictions as his novel, **The War in the Air**, published in 1908, and Northcliffe felt no qualms about offering a prize of 1,000 pounds for the first flight across the English Channel and 10,000 pounds for the first flight from London to Manchester. The purpose behind these offers of prizes was the alerting of the public to the interrelation of the airplane and the coming war with Germany.

There is surely no need to belabor the subject further. The main point is that between the first flights of 1903 and the outbreak of the First World War in 1914 there was an interval of eleven years, years in which to make some preparation for what was to come. The preparation was not made, and though all of the major participants in that conflict had done something with aviation before the catastrophe befell, all nations entered the war unprepared in the air.

For us, at this latter day, the significance of that unpreparedness is only this. Air forces, given eleven or nine or even seven years in which to develop and grow and perfect themselves, might well have prevented the bloodbath that has come to be typified by the positional warfare of lice-ridden trenches. The argument that air forces might have canceled each other out does not hold, for even such air forces as there were did not do so. Air forces, if they had existed, trained and equipped, at the outbreak of conflict — despite the inescapable limitations that must have handicapped them technically — could have demonstrated that they had changed the essential nature of war, and, regardless of their actual effect on the course of battle, could have pointed to lessons of inestimable value to the future.

Who is to blame that this opportunity was not given until too late for it to be effective? As with all judgments — and the historian, if he is to serve his highest purpose, must not shirk making judgments — it is hard to say. Clemenceau said that war is too important a business to be entrusted to the generals. But his experience and our own makes us wonder if it is not too important a business to be entrusted, likewise, to the political arms of government.

PERHAPS THE WORST INDICTMENT we can bring against the period and the personalities we have examined — inadequately, to be sure — is the charge of irresoluteness in politics and in technology. At the same time, we know that resoluteness, without correct evaluation of the facts, is the most pernicious kind of folly.

In his new book, Dr. I. B. Holley, of Duke University, issues a solemn warning that the United States, for this very lack of correct analysis, may fumble disastrously in dealing with revolutionary new weapons of the future, like the hydrogen, the cobalt, and even more cataclysmic bombs. He says:

"It is well to remember that as late as 1939 the Navy gave the atom bomb the polite brush-off. Furthermore, as late as 1940, when the Germans were reported to be diligently in quest of atomic power for military purposes, the United States placed only $6,000 in federal funds behind atomic studies in this country."

Then, in an exhortation to "thoughtful citizens, laymen and specialists, politician and staff officer," he asks if governments, especially our own military establishment, is capable of developing or exploiting to the utmost the "newest weapons on the

horizon." Finally, he throws down the challenge to the historian by inviting his painstaking attention and skilled judgment to the distillation of "every possible lesson from the history of two world wars." It is not an unreasonable suggestion, and it is my hope that some of those in academic life who are troubled or dissatisfied by the situation in which we find ourselves will pick up the gauntlet. Our survival may well depend on how correctly we read the lessons of the past, for surely it is to be wished and wished devoutly that we make a better showing with the new atomic weapon than was made with the air weapon when it was new.

A few months before his death in 1948, Orville Wright said: "I once thought the airplane would end wars. I wonder now whether the airplane and the atomic bomb can do it. It seems that ambitious rulers will sacrifice the lives and property of all their people to gain a little personal fame."

I think no one will deny that it must be our sober task to prove this far-seeing man a poor prophet at last.

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PREPAREDNESS FOR AERIAL DEFENSE

by

Alexander Graham Bell, Ph.D., LL.D.

(Ed. Note: An Address delivered before the National Convention of the Navy League of the United States, Washington, D. C., April 10-13, 1916.)

I DO NOT KNOW much about navies, but this I do know, — that fleets are not confined to the ocean, but now sail over the land. This I do know, — that all the power of Britain's navy has not been able to prevent Zeppelins from reaching England and attacking London, the very heart of the British Empire. Navies do not protect against aerial attack. This also we know, — that heavier-than-air flying machines of the aeroplane type have crossed right over the heads of armies, of millions of men, armed with the most modern weapons of destruction, and have raided places in the rear. Armies do not protect against aerial war.

The curious thing is that the development of aerial machines for offensive war is just in its infancy. We may say that the destruction or damage known to be due to Zeppelins and heavier-than-air machines has been very slight compared with the damage inflicted by armies and navies, but we are only beginning. Why, there are men in the room who can remember the first flight of heavier-than-air machines. It was America that gave aviation to the world. I myself was a witness, and the only witness excepting the workmen employed, of that celebrated experiment of the late Samuel Pierpont Langley, Secretary of the Smithsonian Institution, when his aerodrome model, on May 6, 1896, made a magnificent flight over the Potomac. It was that experiment that demonstrated to the world the practicability of mechanical flight. It was as a result of these experiments that Professor Langley predicted —

"The world indeed will be supine if it do not realize that a new possibility has come to it and that the great universal highway overhead is now soon to be opened."

That was America's first contribution. That was the origination of the modern art of aviation. America was not behind in those days, for America gave the first practical flying machines to the world. Langley himself gave us, in 1903, a machine that did not fly — simply because it caught in the launching ways. And the world looked down on the results, and he was laughed to scorn, and the ridicule attached to this failure to get into the air broke his heart. And yet that machine was a perfectly good flying machine, and has since been flown. There was nothing the matter with it. It stuck in the launching ways, and the public were no more justified in supposing that it could not fly, than they would be were they to suppose that because a ship stuck in the launching ways it would not float. The machine is a perfectly good flying machine, and is the first flying machine ever constructed capable of carrying a man.

He did not succeed in getting it into the air, but only a few days after his last experiment, on December 3, 1903, another man, stimulated by Langley's researches — two other men, Americans both, the Wright brothers — put a motor upon their gliding machine at Kitty Hawk, and flew. They were the first men to get into the air with a heavier-than-air flying machine, and they were Americans. And that was at the end of the year 1903. We lost sight of them during 1904 and 1905. However, they were constantly flying at or near Dayton, Ohio. They were successful in keeping these flights secret, and the world, though they heard that remarkable flights were being made, treated the news — especially in the light of Langley's failure to get into the air, for he was well-known, and the Wright brothers were unknown — as a newspaper story.

Very few believed that they really had got into the air. But others, stimulated by Langley and by the reported success of the Wright brothers, were led to make developments, and here again we have America in the front.

The Aerial Experiment Association was organized at the end of 1907; and in 1908, on the 12th of March, one of the members, Mr. F. W. Baldwin, succeeded in getting into the air on a heavier-than-air flying machine at Hammondsport, on Lake Keuka, on the ice. That was the first public flight of a heavier-than-air flying machine in America. The machine was Selfridge's "Red Wing." Among the members of the Association gathered at Hammondsport was the late Lieutenant Selfridge, the first victim of modern aviation. Many of us can remember when he met his death at Fort Myer, in a flight with Orville Wright, only a few years ago. There were Lieutenant Selfridge, F. W. Baldwin, J. A. D. McCurdy, and a man who has since become representaive of America in this respect — Glenn H. Curtiss. He was introduced to aviation by the Aerial Experiment Association. On July 4, 1908, he made the celebrated flight for the Scientific American trophy for the first measured kilometer under test conditions.

So the Aerial Experiment Association went on and made one experimental machine after another. There was the "Red Wing," the "White Wing," the "June Bug," — that was Curtiss' machine, — and the "Silver Dart." All this was done before the Wrights appeared in public. But in September, 1908, the Wright brothers for the first time appeared in public. Orville Wright flew in America at Fort Myer, and Wilbur flew in Europe, and the world then found that the Wright brothers were ahead of everyone.

We all know the history of aviation from that time. We can recognize that it is a purely American art. But where are we to-day in that art? The exigencies of the European war have developed the offensive powers of both dirigible balloons and heavier-than-air flying machines. The belligerent powers have thousands of machines of the aeroplane type. How many have we? I do not know, but I think that the Army and Navy together may be able to account for twenty-five, maybe a few more.

We are the only great power that has not hundreds of these machines. As for dirigible balloons, — well, we haven't any. It is true the Navy possessed a small dirigible balloon, about 160 feet long, which could not be armored, and could not get out of reach of anti-aircraft guns. But I see by the newspapers that that has escaped from its moorings, and gone off into the unknown.

That represents America's preparedness for aerial warfare of the Zeppelin kind. Now, this is a matter of the very gravest consideration, especially when we remember that the art of aerial locomotion is only in its infancy. Whatever the offensive powers of these machines may be to-day, is it conceivable that we are going to rest there? Are there no improvements to be made? If so, it is the part of preparedness to look forward into the future and prepare for that which we foresee must come.

We must foresee that our great cities are liable to be raided by dirigible balloons of great size, raining down bombs upon the inhabitants. And what have we got to protect us? Nothing. The Army and Navy can't protect us. The only thing we have is this little handful of heavier-than-air flying machines. It is obvious that an aerial fleet cannot be overcome excepting by an aerial fleet of superior force, and we have not got it.

In relation to the heavier-than-air flying machine, we had the possibility of its use demonstrated here only a few days ago. A large proportion of the inhabitants of the city of Washington saw a heavier-than-air flying machine hovering over Washington. It made a circle over the city and went away. That machine had come

from Newport News right up to Washington, and returned without landing, in five hours. Why, it takes twelve hours to go down to Newport News by boat; it takes from five to seven hours by train; and here this machine had come up from Newport News to Washington in two and a half hours and returned in the same time. Suppose that had been a hostile machine. We have every proof that if any hostile fleet should come anywhere near our shores, it could have flying machines hovering over Washington in about two or three hours. There is our Capitol, and there are our beautiful public buildings that we have here, all at their mercy, and nothing to defend them. Fortunately, such a war has not come here, and I trust it may not come for a long, long time; but it is surely our duty to prepare, and we cannot meet an aerial attack except by an aerial defense. We must multiply our dirigible balloons — we have not got any yet. We must multiply our heavier-than-air machines — and they are really the most important, as the indications are that the heavier-than-air machine has the dirigible at its mercy if it can get at it. The heavier-than-air machine can go higher than the dirigible, it has a greater range of altitude, it has a greater speed; and once a heavier-than-air machine can get over a dirigible, there is not much hope for the latter. So that really that art which we originated, the art of aviation, the art of flying heavier-than-air machines, will be our greatest protection. It does not cost much to make a heavier-than-air flying machine. It costs enormously to make dirigible balloons comparable to the Zeppelins of Germany. But we can make flying machines. The difficulty of making flying machines need not bother us at all. We are turning them out now in large numbers, but not for use in America. They do not cost much; they do not take long to construct.

But there is one element in relation to the flying machine that we are not producing, that we cannot produce in an emergency, and that is the men. We can produce machines, but not the aviators. That takes time. We have one hundred million population in the United States, but how many aviators have we? Only about three hundred, all told, licensed aviators in the United States; but when the emergency comes for aerial defense, we will want them by the thousands. Where are we to get the men, and where are we to train them? That is a serious problem in aerial defense. There seems to be only one possible way by which we can supply the multitude of trained aviators before the time comes when the necessity for their use in war arises, and that is to find uses for the flying machine in times of peace, uses that will support a multitude of aviators.

Flying machines have not yet made much headway in commercial use, but a very promising line has been suggested by which America can gain an aerial reserve for use in time of emergency, and that is to use the flying machine for carrying mail. If we had numerous aerial postal routes established in the United States, we would have aviators flying over a particular route day after day, week after week, getting familiar with the conditions in the air, and the look of the ground underneath them. We could in that way obtain a large number of trained aviators, who would offer a sort of aerial reserve for the Army and Navy when the time of emergency should arise.

It seems to me that, in relation to the heavier-than-air flying machine, the most practical thing we could do is to urge upon the Postoffice Department the use of these machines in carrying the mail, to establish as many aerial postal routes as we can. We had an illustration the other day in the case of this flying machine hovering over Washington, coming up from Newport News in two and a half hours. If it had carried the mail, there would have been a great gain over the railroads. Why, you could get mail matter from New York to Washington in a couple of hours. We could get the high-powered machines, like those used by the belligerents in Europe — those are the machines we want to get — that make a hundred miles an hour. This machine

that came up here made only fifty miles an hour. It came up in two and a half hours from Newport News; but if it had had one of these high-powered European motors that give a speed of about a hundred miles an hour, it would have come up in about an hour and a half. Think of that: a hostile machine could come from the sea in an hour and a half, and hover over Washington; and in times of peace we could send mail matter from Washington to Newport News, or from Washington to New York and other places, equally distant, in an hour and a half.

In considering the possibility of mail service, we must know, of course, that a machine is able to fly under any conditions. When we look back to the early days here, although they are only eight years ago, we remember how aviators were afraid of the wind. They went up in a calm, and if there was any wind blowing they postponed their flights for another occasion. But the necessities of war have gotten rid of that, and aviators are no longer afraid of the wind. They fly in all sorts of weather in Europe. We had an exhibition a few days ago in Newport News of a machine there maneuvering in a fifty-mile breeze — a regular storm-wind. Wind does not count as much as it did before; and the heavier the machine is and the faster it is, the more it can make its way against the wind. We have machines now — I should not say "we," they in Europe have machines now — that can be relied upon to go day after day over the same course in any sort of weather, except, indeed, a regular hurricane. So it is perfectly practical to establish aerial postal routes.

This body should consider, I think, the establishment of plans for aerial defense as among the most important questions that can be considered, and Congress should be generous in its appropriations for flying machines and dirigible balloons.

It is a little more difficult to see how we can use the dirigible balloon in time of peace; but it is important that we should have these machines, and many of them. Their great function is to carry weight. The heavier-than-air flying machine is for speed, but not of much use in carrying weight until we have learned to build larger and more efficient machines. Their use is for scouting purposes, for rapid work from place to place. They are admirably adapted for carrying mails. The dirigible balloon is useful for the weight it carries. The most recent Zeppelins are said to support a weight of thirty tons in the air. Allowing fifteen tons for the weight of the machine, its crew, etc., they are said to be able to carry a useful load of fifteen tons. Think of it! Thirty thousand pounds of useful load! If our Army only had one of those machines now, they could carry rations for 10,000 men in a single trip over any sort of country, even where there are no roads; and I rather think that the cost of the transportation would be less than by mule wagon and motor car. But we haven't one, so it is no use considering that.

If we can only find use for them in peace, we can get a supply that can be used in war. It is a little difficult to see how that can be done. It seems to me it can only be done by the stimulation of companies by subsidies from the government. You may have an aerial route from New York to Washington. It could not carry heavy freight, it could carry parcels; it could carry first-class mail matter. The newspapers could use it to send the issues they want to distribute in another city. There would be an advantage there, coming from New York to Washington in about two hours, instead of the five hours now required by our fastest express. And I have no doubt that business men and many other people would be glad to pay many times the cost of the railroad fare to enjoy a ride through the air from New York to Washington. Then the Post Office could assist, in the case of the parcel post. It would be useless to expect it to take heavy freight. Anything that the government can do to establish these large dirigible balloons in actual use will be of assistance to it when the time for war comes.

There is another consideration in this matter. Neither the Army nor the Navy is of any protection, or of very slight protection, against aerial raids. We may therefore look forward with certainty to the time that is coming, and indeed is almost now at hand, when sea power and land power will be secondary to air power, and that nation which gains control of the air will practically control the world.

That is a very serious thought; but that time is coming and is almost now here. What protection has Britain's navy been against aerial attacks? What protection have the armies of Europe been against attacks in the rear by heavier-than-air machines? We must realize that we are only in the infancy of aerial locomotion; that this is only the beginning of things. These are not matured machines that have developed their full offensive power; there is going to be further improvement, and if you will allow your mind to look ahead you can see that land power and sea power will ultimately be secondary in importance to air power.

Now, the United States has a great advantage, so far as future progress is concerned. We are an inventive people. In fact, the chief weapons of modern warfare used in Europe are American inventions, nearly all of them. We are an inventive people, and if we prepare in time we can develop these machines to greater and greater usefulness, and we will have a good chance of becoming the nation that will ultimately have the control of the air.

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PURPOSE OF THE FOUNDATION

An Editorial

The Air Force Historical Foundation was organized on 20 February 1953 by a group of senior Air Force officers, active and retired, and a number of interested civilians, to serve a multiple cause.

First in order of importance is a continuing endeavor to free men's thinking from established values and patterns which are products of historical examples that evolutionary processes have outmoded. The cost and the hazard from preserving these now obsolete military patterns and values it will be the purpose of the Foundation to expose. It plans to further this purpose through its quarterly publication, "The Air Power Historian." This publication is distributed to all members of the Foundation.

A major objective will be an effort at clarification on the contribution that history, in the form of examples, can and cannot make to a current objective strategy and to the composition of force that should be maintained to support it.

Experience, as recorded in the annals of military history, is far too generally accorded a capability that it does not merit in the solution of military problems. This derives from the assumption, which is strong in the orthodox military mind, that the answer to current and future problems can be found in historical examples. The assumption is not supported by logic. The validity of any military value derived from experience will be limited to the specific features and factors of that test. When related factors change in value, or when new factors are added, a new problem emerges. Its solution will demand both the capacity to cope with reality and the courage to employ foresight and prediction in the evaluation process. While historical examples can point the way to clearer thinking, they do not give solutions to current problems that logical diagnosis will support. As patterns of organization and tactics, they are rooted to the past and are out of phase with current and future factor values.

But in the annals of history there are lessons of great value to the mind that would expand its comprehension in the field of military conflict. The profit to be gained will be measured by the soundness with which the specific experience is diagnosed and appraised. When the causes of a military result, which invites preservation as an historical example, are fully understood the limitations in application of the patterns of that example become readily apparent. To assume that historical examples reflect solution of current and future military problems in either organizational structure or objective strategy is to ignore the dynamics of the issue and the impact of change — revolutionary in magnitude — which has become a key factor in the military equation. The factor of change relegates the historical examples of past experience, on which the orthodox mind leans so heavily, to either obsolescent or archaic files.

The current strategic equation has not been processed in the crucible of experience. It has no counterpart in history. To accept initially the limitations of outmoded patterns of warfare would again force a resort to costly and poorly phased improvization in response to the demands of hindsight, which has so significantly characterized major military modifications of the past. Facing the initial destructive potential of modern military weapons it would be illogical, and excessively dangerous and costly. Experience yet to be purchased as a teacher in the decisive category of future military conflict forebodes a prohibitive danger and cost. Foresight and prediction are, therefore, mandate if the solution is to serve a purposeful and timely meaning.

If past experience, which has already been bought and paid for, is to serve sound purpose in the processing of current and future strategic problems, the appraisal of

that experience should be focused on causative factors. The limiting features should be clearly and realistically defined. This technique in treating with historical experience will contribute directly to an expanding comprehension on the complexities of warfare. It will add to the competence of the solver of modern military problems. It will quickly expose the costly superficiality of resorting to outmoded historical examples for patterns of procedure in the conduct of modern military conflict, or for the assignment of roles and missions to the components of current military force.

These thoughts, then, can depict the editorial attitude of the publication of "The Air Power Historian." An Editorial Board of five members (military, active and retired, and civilians) passes on the articles for publication and the editorial policy to be established and followed for each issue.

The degree to which the Foundation can contribute to more logical and realistic thinking on the current strategic problem facing our military forces will be a measure of its profit.

However, in general "The Air Power Historian" is dedicated to the belief that our civilization cannot survive if the people who enjoy its blessings and favors display a horrible weakness of conviction and lack of courage. History then is to be studied for its flaws as well as its merits and achievements. Examples in history are to be treated for their causative factors and not treated solely in terms of final fulfillments and accomplishments. Final achievements can be and frequently are as much the result and product of enemy errors as successful action on the part of the victors. Since air power is directly related to the atomic age, and in a sense fostered it, air power must be treated accordingly.

In addition, The Air Force Historical Foundation is dedicated to the preservation and perpetuation of the annals of American air power, and especially the annals of the United States Air Force and its predecessor organizations. It is dedicated to the preservation, in suitable repositories, of significant materials depicting the history, culture, and traditions of the United States Air Force.

The Foundation, located at Maxwell Air Force Base, Alabama, is an independent, incorporated, nonprofit organization, intimately associated with, and at all times coordinating its program with the United States Air Force. Operating closely with the official Air Force Historical programs, it complements those programs by sponsoring activities in which the Air Force cannot engage because of budgetary, legal, or policy restrictions.

"The Air Power Historian" intends to present in popular style authoritative information about Air Force heroes and Air Force incidents of importance. Currently being featured are stories on the development of the Air Force and the early struggles for recognition. General Frank P. Lahm presented the first of the series. General Benjamin D. Foulois has continued through two series, and General T. DeWitt Milling will present the fourth of the series. Early in 1956, General Foulois will return with the story of the 1st Aero Squadron, its development, its Texas campaign, and the association with the army in the war against Mexico. Also in each issue an attempt is made to include items of editorial significance, treating primarily with the significant contributions of history to the expanding complexities of warfare.

The Foundation collects from private owners, industrial agencies, and other sources, significant materials — personal papers, books, souvenirs, relics, manuscripts, etc. — which depict the history and traditions of the service. It is seeking art objects to record Air Force activity throughout the years, and very shortly will sponsor a traveling exhibition of paintings (by artists of The Society of Illustrators) which

depict scenes of Air Force activities all over the world, past and present. A speakers service is available for the distribution of historical information at meetings of important public groups. A series of tape recordings, the first of which has been completed, on the early flying struggles by Generals Lahm, Foulois and Milling, will be available on a loan basis to agencies having good use for them.

The Foundation receives its sole support from contributions and from the members of the organization. All contributions are tax free. Because the Foundation is in its infancy, and because it has outlined a healthy robust plan of operations, new members are constantly being solicited. Initial and Annual membership fees are $3.00. A Life membership is $100.00, and this is paid only once for life. Contributing membership is $100.00 annually. Patron Life membership is $1,000.00 to $5,000.00, and Benefactor Life is $5,000.00 or above. Membership and information may be secured by writing directly to the Executive Director, Major General Orvil A. Anderson (Ret), The Air Force Historical Foundation, Maxwell Air Force Base, Alabama.

Officers of the Foundation are:

President	Maj. Gen. Benjamin D. Foulois (Ret)
1st Vice President	Lt. Gen. Idwal H. Edwards (Ret)
2nd Vice President	Maj. Alexander P. deSeversky
3rd Vice President	Mr. Gill Robb Wilson
Treasurer	Maj. Gen. St. Clair Streett (Ret)
Secretary	Maj. Gen. Dean C. Strother

The Executive Committee consists of the above-named officers, with General Edwards as Chairman, and includes the following members of the Board of Trustees:

General Carl A. Spaatz (Ret)
Lt. Gen. Hubert R. Harmon (Ret)

Following the latest election held during the Annual Meeting of the Foundation at Bolling Air Force Base, Washington, D. C. on 9 June 1955, the Board of Trustees now consists of the following officers:

Mr. William A. M. Burden
Maj. Gen. R. L. Copsey
The Hon. James H. Douglas
Lt. Gen. Ira C. Eaker (Ret)
Lt. Gen. Idwal H. Edwards (Ret)
Maj.. Gen. Benjamin D. Foulois (Ret)
Lt. Gen. Hubert R. Harmon (Ret)
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Maj. Gen. Dean C. Strother
The Hon. Stuart Symington
Mr. Edward L. Tinker
Gen. Nathan F. Twining
Mr. C. V. Whitney
Mr. Gill Robb Wilson

The Executive Committee and the members of the Board of Trustees meet at least annually, and oftener if desired by the President. The time and date of the next Annual Meeting has not yet been decided on, but will be announced to all members at a later date. Tentatively it is contemplated that the next meeting will be held in one of four places: Montgomery, Alabama; Washington, D. C.; Denver, Colorado; or Detroit, Michigan. Any and all members are privileged and invited to attend.

Any member who has items of historical importance or significance, or writings, manuscripts, incidents or anecdotes, and who feels that they may be worth more to the Foundation than hid away in some trunk, is invited to present them to the Foundation for evaluation and possible retention and exhibition or publication.

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HOW IS YOUR MEMBERSHIP STANDING?

Please look at the date on your Membership Certificate. If your renewal date is at hand, the timely receipt of your $3.00 renewal check will be welcomed. REMEMBER that it can be deducted from your Income Return. Also, please give us as early a notification of change of address as you can. It will tend to insure that your copy of "The Air Power Historian" will reach you promptly.

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